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1 Introduction

The Dutch labour market of the last few decades has been characterised by a sharp increase of unemployment in the beginning of the eighties, reaching its highest level in 1983. After 1983 unemployment declined but at the moment it is still quite high. Although the development of unemployment was similar all over the country, there were regional differences. In the northern part of The Netherlands unemployment hardly decreased at all after 1983, while in the eastern and southern parts the decline was larger than in the western part. There are also substantial differences in the regional unemployment rate. In 1988 the unemployment rate in the region Groningen was 11% while in for example Utrecht it was only 5%; while the Dutch average was 6.7% (see Table 1 below).

As far as the causes of the rising unemployment in The Netherlands are concerned, there has been a debate as to what extent a worsening of the functioning of the labour market contributed to the high unemployment. Empirical studies based on the relationship between unemployment (U) and vacancies (V) claim that unemployment due to market imperfections has increased in the last few decades. The general conclusion of the Dutch UV studies is that the UV curve shifted substantially in 1967 and shifted steadily after that year, indicating increasing labour market imperfections.[1] There is no thorough explanation for the shift in 1967 and the explanations for the gradual shift after that year differ: increasing heterogeneity due to structural changes in labour supply or labour demand, decreasing search intensity of job seekers, increasing employers' selectivity and so on.[2]

Recent studies emphasize the importance of labour market flows in understanding the functioning of the labour markets.[3] Instead of a traditional UV curve these studies use a matching function to describe labour market performance. A matching function specifies the relationship between the flow of filled job vacancies and the stocks of job seekers and job vacancies. Only at a given flow of job vacancies is the matching function equivalent to a UV curve. Conclusions about structural detoriation of the labour market based on an outward shift of the UV curve may be fallacious if this shift reflects an increase in vacancy flow at a given labour market efficiency.

This article investigates whether there are regional differences in labour market efficiency in The Netherlands by using regional matching functions for the Dutch labour market. It is shown that the efficiency of the labour market can be studied by analysing the relationship between durations of unemployment and vacancies. The analysis of regional differences is somewhat limited, because there are only few data on unemployment and vacancy durations on a regional level. The conclusion of this study will however be clear: there are substantial regional differences in labour market efficiency.

The article is set up as follows. In section 2 characteristics of Dutch regions and regional developments in unemployment and vacancies are presented. Section 3 discusses the theory of the matching function. In section 4 the data on unemployment and vacancy durations are discussed and empirical analysis is performed. Section 5 concludes.

C. H. A. Verhaar and L. G. Jansma et al. (eds.), On the Mysteries of Unemployment, 179–188.

2 Setting the stage

Some economic, demographic and labour market characteristics of Dutch regions are shown in Table 1. The regional contribution to the gross national product differs substantially. Regions like Friesland, Drenthe and Zeeland each produced 3% of the GNP in 1984, while for example Zuid–Holland contributed 24%. We distinguish four major regions in The Netherlands: North (Groningen, Friesland, Drenthe), East (Overijssel, Flevoland, Gelderland), West (Noord–Holland, Zuid–Holland, Utrecht, Zeeland) and South (Limburg, Noord–Brabant). The contribution of the western region is about half of GNP, North and East each contribute about 15% and South about 20%.

As shown in Table 1 the population is unequally distributed across The Netherlands. The northern and eastern part have a below average population density. The western part, especially Zuid–Holland, has a high population density. Table 1 shows that unemployment rates also differ between regions, with the highest rates in Groningen and Friesland and the lowest in Zeeland and Utrecht. Unemployment is highest in the northern part and below average in the southern part. The opposite holds for the vacancy rates. Long–term unemployment (>1 year) differs between regions with no obvious relationship to unemployment rates. The share of long–term unemployment for example is equally high in Groningen and Gelderland, with substantially different unemployment rates.

Table 1 Regional characteristics of Dutch regions

		GRP 1984 %	pop. density 1984 inh/km^2	U % l.f. 1988	V % l.f 1988	LTU % 1987
North:	Groningen	8	237	11.1	0.33	58.1
	Friesland	3	178	8.0	0.28	50.3
	Drenthe	3	164	6.7	0.26	51.7
East:	Overijssel	6	302	7.2	0.16	55.3
	Flevoland	–[a])	137	6.4	0.53	42.2
	Gelderland	10	356	6.1	0.26	58.0
West:	Utrecht	6	725	4.8	0.37	48.3
	NH	18	882	6.1	0.57	53.1
	ZH	24	1104	6.4	0.50	53.6
	Zeeland	3	199	4.4	0.38	41.9
South:	NB	13	436	6.0	0.41	51.0
	Limburg	6	505	6.9	0.49	54.0
Netherlands		100	435	6.7	0.38	51.5

U = unemployment, V = vacancies, LTU = long–term unemployed (>1 year)
GRP= Gross Regional Product, l.f.= labour force,
Sources: Ministry of Social Affairs and Employment.
Kwartaalbericht Arbeidsmarkt, 1989.1.
Central Bureau of Statistics.
Regionaal Statistisch Zakboek, 1989.
a) In 1984 the GRP of Flevoland was added to that of Overijssel.

From Table 1 it is obvious that the western part is the economic centre of The Netherlands. Demographic and labour market characteristics indicate that the western and northern parts are two extremes. The western part has a high population density, relatively low unemployment and a high vacancy rate. The northern part has a low population density, a high unemployment and a low vacancy rate.

The developments in regional unemployment and vacancies in the period 1972–1989 are shown in Figure 1.[4] On average unemployment in the seventies did not increase very much. In the beginning of the eighties unemployment grew rapidly, due to a combination of shrinking employment and increasing labour supply. After 1983 unemployment declined again. However at the end of the eighties unemployment was substantially higher than at the beginning of the eighties. In the seventies the number of vacancies fluctuated somewhat. In the period 1979–1983 the number of vacancies declined to less than 10,000 in 1984, to increase again after that year.

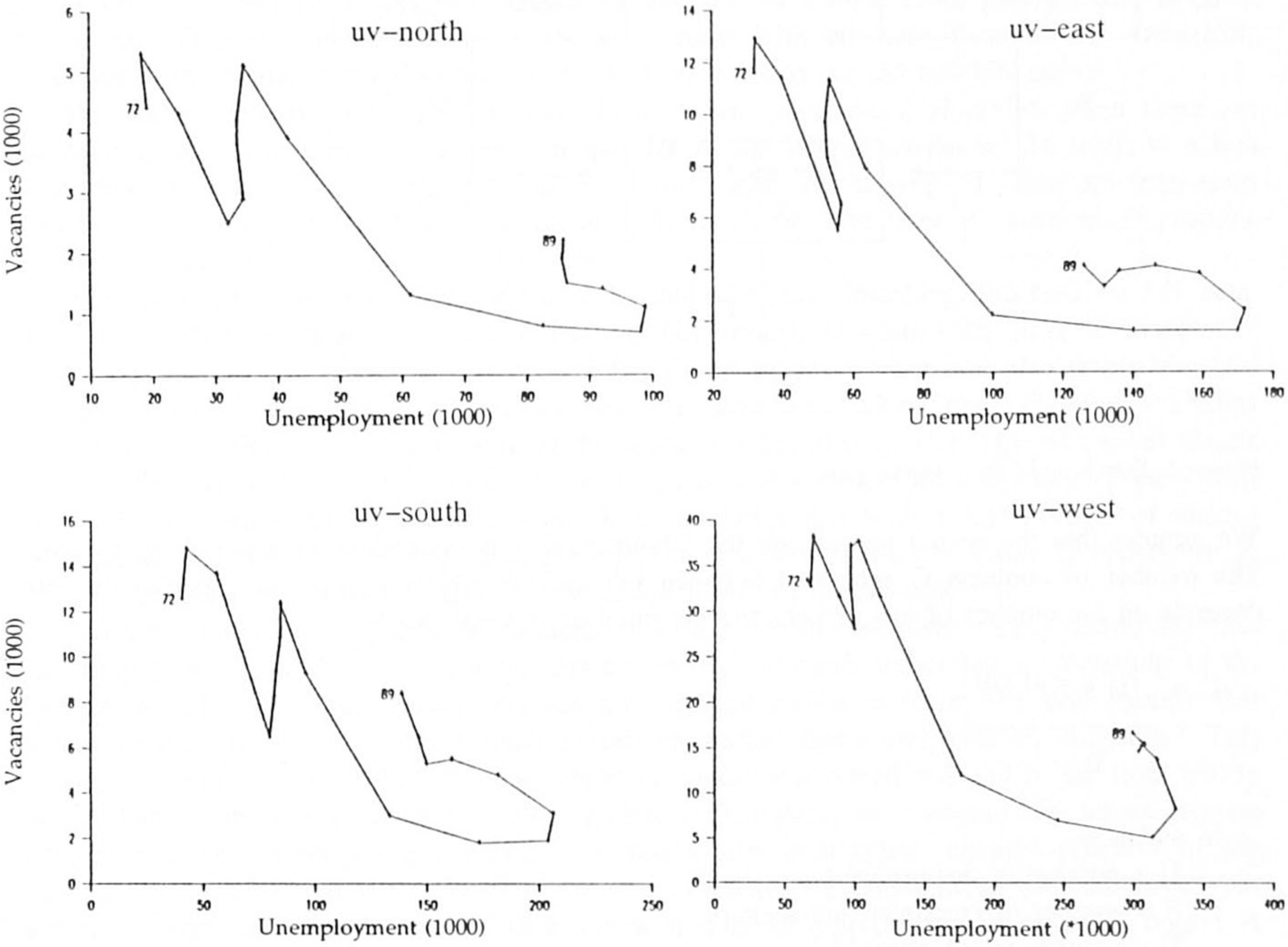

Figure 1: Unemployment and vacancies in Dutch regions

Figure 1 shows that there are regional differences in developments on the labour market, especially concerning developments after 1984. In the eastern part the number of vacancies hardly increases, but unemployment declines substantially. In the southern part of The Netherlands unemployment declines and the number of vacancies increases. In the northern and western part the number of vacancies increases, but unemployment hardly declines.

3 The matching function

Employers search for new employees by creating job vacancies. On the labour market employers with vacancies and job seekers are searching for each other. This search process eventually leads to vacancies that are filled: employers hire a new employee and unemployed workers find jobs or employed job seekers find a new job. The flow of filled job vacancies (F_v) is equal to the sum of the flow of unemployed workers finding jobs (F_u) and the flow of employed job seekers finding a new job (F_s). This search process and the resulting labour market flows are illustrated in Figure 2.

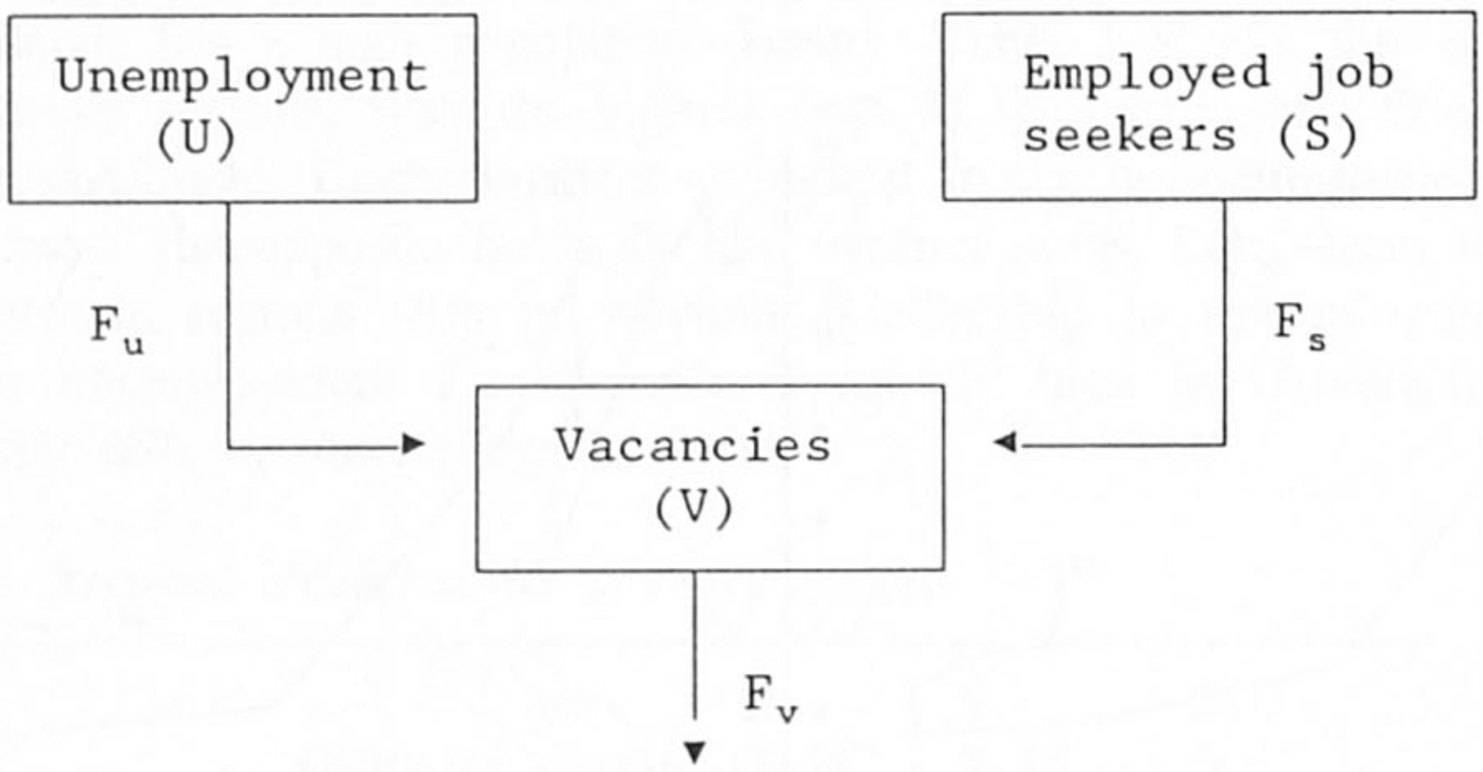

Figure 2: Search and labour market flows

We assume that the search process on the labour market is equivalent to a matching process. The number of contacts C generated between job seekers and employers in a period of time depends on the number of job seekers and the number of vacancies:[5]

$$C = \frac{(U + S)^{\alpha}.V^{\beta}}{T_m} \qquad (1)$$

in which:

U = number of unemployed
S = number of employed job seekers
V = number of job vacancies
T_m = average time between contacts
α,β = scale parameters

$1/T_m$ is the rate at which potential contacts materialise or the 'clock-speed' of the labour market, i.e. the rate at which job seekers and employers meet. The flow of filled job vacancies F_v is equal to:

$$F_v = [(U + S)^{\alpha}.V^{\beta}/T_m].P_c \qquad (2)$$

in which: P_c = probability a contact results in a job.

We define:

$$k = P_c/T_m \tag{3}$$

where k is an indicator of efficiency of the labour market. Then we can write (4) as:

$$F_v = k.(U + S)^{\alpha}.V^{\beta} \tag{4}$$

Equation (4) is the matching function for the labour market, a production function which describes the relation between the flow of filled vacancies and the stocks of job seekers and vacancies. Ignoring the stock of employed job seekers we have a relation between the flow of filled vacancies and the stocks of unemployed and job vacancies. From this we derive that a traditional UV curve is in fact a matching function with constant flow of job vacancies. Changes in the labour demand or labour supply lead to loops around this UV curve.

The coefficients α and β in equation (4) are scale parameters; if $\alpha+\beta<1$ then there are decreasing returns to scale; an increase in the size of the labour market stocks leads to a less than proportional increase in the flow of filled job vacancies. If $\alpha+\beta>1$ there are increasing returns to scale. If $\alpha+\beta=1$, there are constant returns to scale: the flow of vacancies is proportional to the size of the labour market stocks.

Blanchard and Diamond have estimated a Cobb–Douglas matching function on US data. They found that this matching function has constant returns to scale with an α of about 0.4.[6] Van Ours estimated a matching function of the Dutch labour market and also found constant returns to scale.[7] This study confirms on the one hand conclusions from Dutch UV studies about the worsening of the functioning of the labour market at the end of the sixties but claims on the other hand that in the course of the seventies and eighties the efficiency of the Dutch labour market remained quite stable. Van Ours concludes that with a higher level of unemployment and lower level of job vacancies the Dutch labour market of today is apparently as efficient in generating a flow of filled vacancies as it was in the seventies.

Jackman, Layard and Pissarides assumed constant returns to scale.[8] They found that the matching function of the British labour market shifted outward, indicating a worsening in the functioning of that labour market. We assume constant return to scale. We also assume that labour market stocks equal the product of labour market flows and average durations.[9] This assumption holds by definition under steady state conditions, which will not be far from reality in the Dutch labour market of the late eighties. Furthermore we assume that across regions unemployed and employed job seekers are relative to each other, equally efficient in job finding: we assume that the ratio of the search durations for unemployed and employed job seekers is constant across regions. This means that if an employed job seeker in region A needs more time to find a job than an employed job seeker in region B, an unemployed job seeker in region A also needs more time than an unemployed job seeker in region B. Using these assumptions and dividing the equation by F_V, we can rewrite (4) as:

$$1 = k.T_u^{\alpha}.T_v^{1-\alpha} \tag{5}$$

Instead of a relation between stocks of unemployed and vacancies, we now have a relation between durations of unemployment and durations of vacancies. From (5) it appears that the efficiency parameter k is a geometric weighted average of unemployment duration and vacancy

duration. We analyze regional differences in labour market efficiency by using the efficiency parameter k as an indicator.

4 Data and empirical analysis

4.1 DATA

The basis of the information on unemployment is the registration of the unemployed at public employment offices. There are however registration problems, mainly because the public employment offices are not notified immediately if an unemployed worker finds a job. According to recent estimates actual unemployment is some 40% lower than registered unemployment.[10]

There are also problems concerning the data on job vacancies. The basis of the regular information about job vacancies in The Netherlands consists of vacancies notified to the public employment service. As in most EC countries in The Netherlands the employer has no obligation of notifying the public employment service, so notified vacancies are only a part of the actual number of vacancies. In The Netherlands in 1980 some 72% of the job vacancies were reported to the public employment office. Although the notification of job vacancies is costless for the firm, whether or not the vacancy is notified to the public employment office may depend on labour market conditions. In the course of the eighties the share of vacancies notified to the public employment office decreased to 36% in 1988.[11]

Although we had to accept these data problems because over a longer period of time we only have information on registered unemployment and vacancies, since we estimate a matching function specified as in equation (5) a lot of registration problems do not effect our analysis. The crucial assumptions in our analysis are first that average duration of all vacancies is equal to average duration of vacancies reported to public employment offices and second that average unemployment duration is not effected by the registration procedures or that registered unemployment duration is proportional to real unemployment duration.[12]

To study the relationship between unemployment and vacancy duration we use data from various sources. Information on the flow of job vacancies reported to the public employment office, derived from Hartog, and information on the number of notified job vacancies is used to

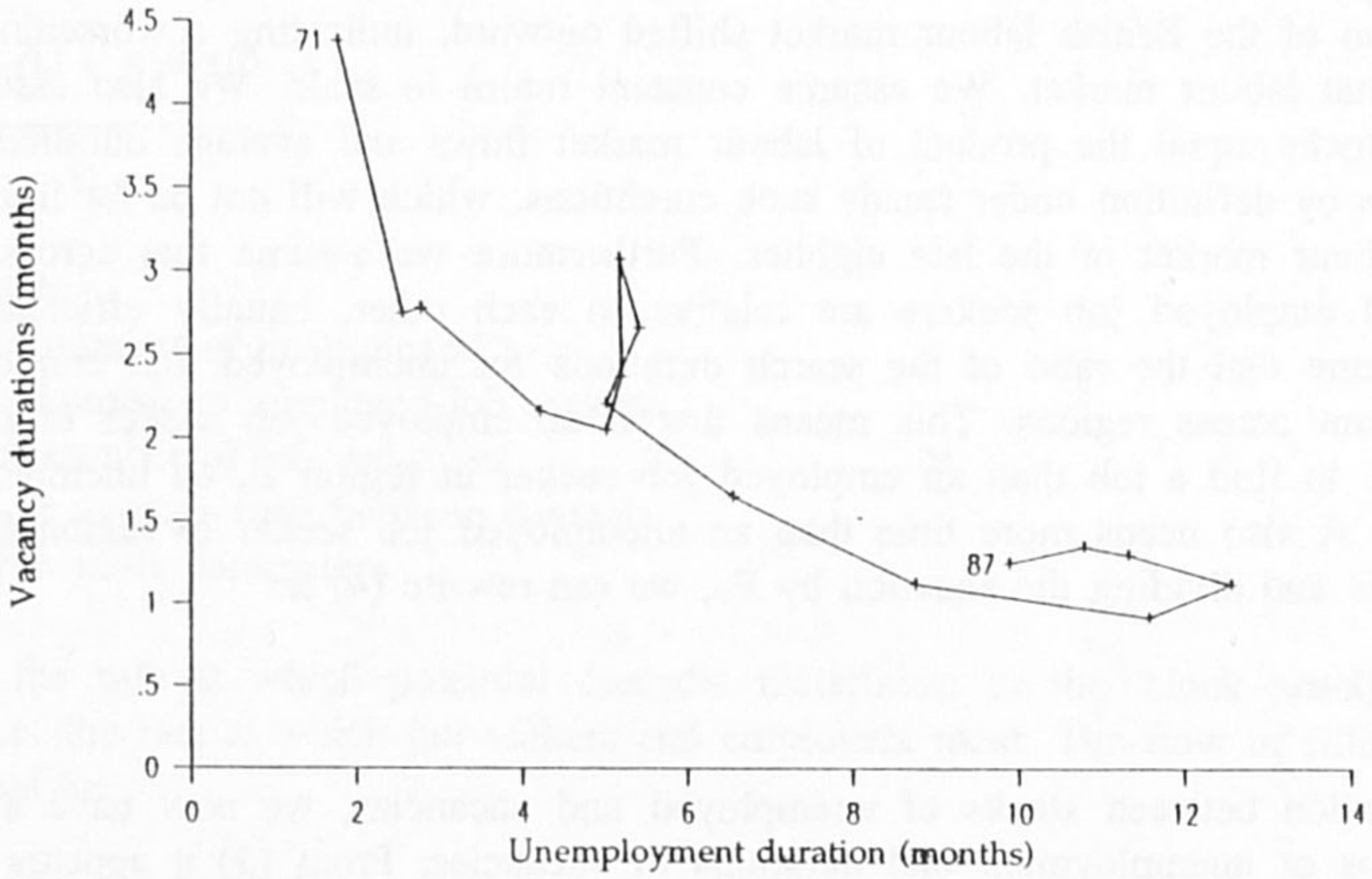

Figure 3: Durations of unemployment and job vacancies in The Netherlands: 1971–1987

calculate average vacancy durations over the period 1971–1978.[13] Furthermore information is used on elapsed vacancy durations derived from the CBS vacancy surveys. By applying the method as described in Van Ours and Ridder the latter information is used to calculate average vacancy durations over the period 1980–1987.[14] Information on the inflows and stocks of job seekers is used to calculate average duration of unemployment. The relationship between average unemployment and vacancy durations is shown in Figure 3.

It appears that this relation has form similar to the UV curves shown in Figure 1. Average unemployment duration increased from 2 months in 1971 to more than 12 months in 1984. In 1987 average unemployment duration was about 10 months. Average vacancy duration decreased from 4.5 months in 1971 to about 1 month in 1982 and has remained approximately the same since then.

To perform a matching function analysis on a regional level in The Netherlands is difficult. There is hardly any information on regional unemployment and vacancy durations. Using information on stocks and flows of unemployed and vacancies at the public employment offices we were able however to calculate quarterly average vacancy durations and unemployment durations in every Dutch region for the year 1988. The yearly average durations are shown in Figure 4.

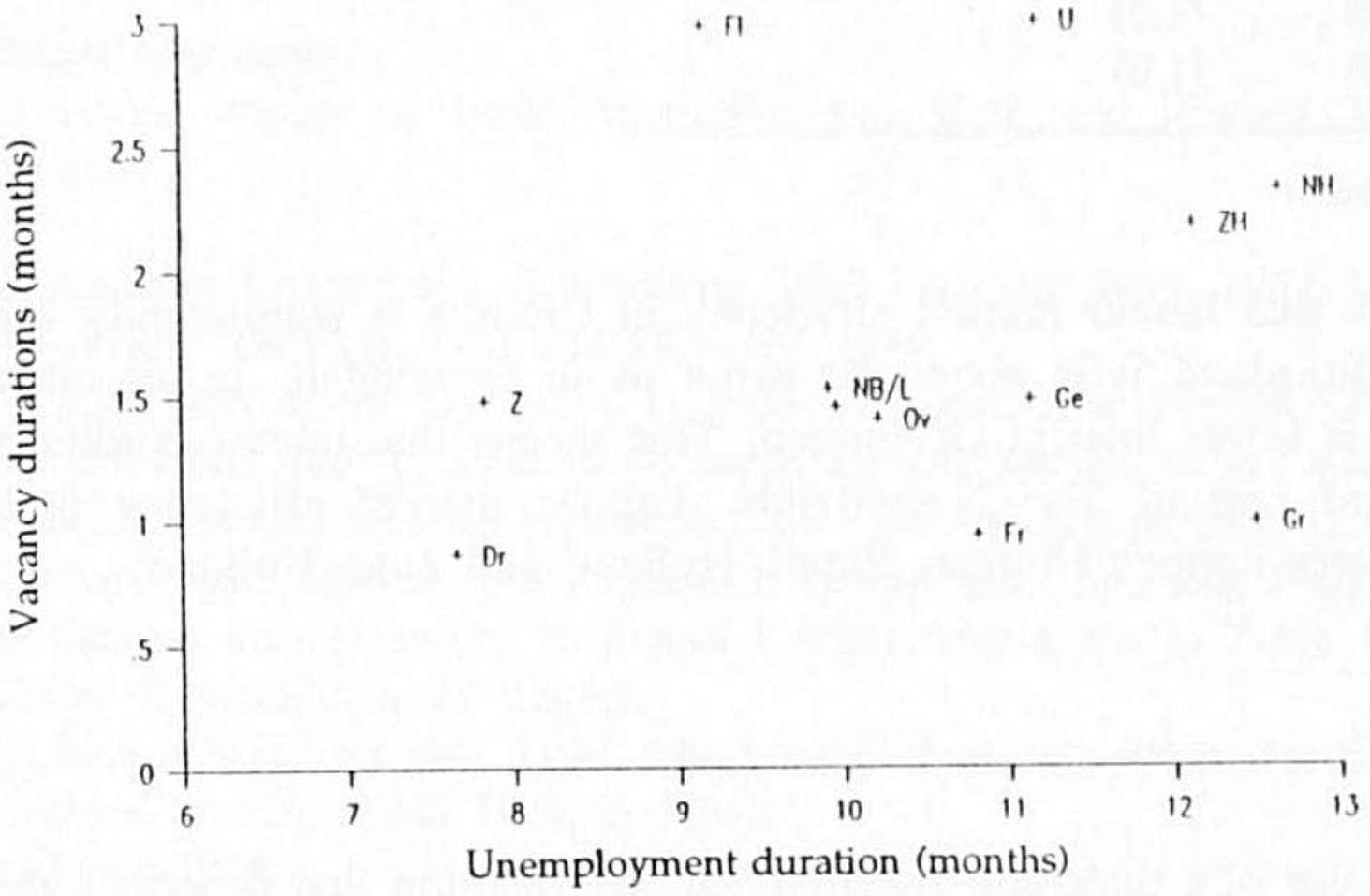

Figure 4: Durations of unemployment and vacancies by region: 1988

From this figure it appears that Utrecht, Zuid–Holland and North–Holland both have long vacancy durations and long unemployment durations, indicating a low labour market efficiency. Zeeland and Drenthe on the other hand have a combination of short vacancy durations and short unemployment durations, indicating a high labour market efficiency. The other regions have different combinations of average unemployment and vacancy durations, indicating average labour market efficiency.

4.2 EMPIRICAL ANALYSIS

We used the estimation results of Van Ours to analyse whether there are regional differences in labour market efficiency.[15] Using the α of 0.44 from this study we may rewrite equation (9) as:

$$k = T_u^{-0.44}.T_v^{-0.56} \qquad (6)$$

We used (6) to calculate regional and quarterly k values for the year 1988 and analysed whether the differences between the k values are significant. In the estimation we used Groningen as reference region and specified dummy variables for the other regions. The estimation results are shown in Table 2.

Table 2 Estimation results of regional labour market efficiency[a])

	Coefficient (t–value)	
Constant	0.35	(11.1)
Friesland	0.03	(0.6)
Drenthe	0.10	(2.2)
Overijssel	–0.04	(1.0)
Flevoland	–0.14	(3.2)
Gelderland	–0.07	(1.6)
Utrecht	–0.14	(3.1)
Noord–Holland	–0.13	(2.8)
Zuid–Holland	–0.13	(2.9)
Noord–Brabant	–0.05	(1.0)
Utrecht	–0.03	(1.0)

a) Reference region: Groningen

From this table it appears that labour market efficiency in Drenthe is significantly higher than in Groningen, while in Friesland it is about the same as in Groningen. In all other regions labour market efficiency is lower than in Groningen. This means that labour market efficiency is highest in the northern part of The Netherlands. Labour market efficiency is lowest in Flevoland and in the western regions Utrecht, Noord–Holland and Zuid–Holland.

5 Conclusions

This article discusses the use of a matching function, i.e. the function that describes the relation between the flow of filled job vacancies and the stocks of job seekers and job vacancies, to analyse labour market efficiency. It is shown that the matching function may be specified as a relation between durations of unemployment and durations of vacancies. From this relation we derived an indicator of labour market efficiency. To study regional differences in labour market efficiency therefore requires regional data on unemployment and vacancy durations. These data are extremely scarce. We were able to construct quarterly data on regional unemployment and vacancy durations for one year: 1988. Using these quarterly data we concluded from our analysis that labour market efficiency is least in the western and eastern part of The Netherlands and highest in the northern part.

Of course we have to be modest since this conclusion is based on few data. It is however obvious that the differences in vacancy durations are large; in the northern region the average vacancy duration is 1 month, while in Utrecht it is about 3 months. Therefore we think that the conclusion that there are regional differences in regional labour market efficiency holds, even with few data.

The high labour market efficiency of the northern part of The Netherlands is a striking conclusion since the northern unemployment rate is by far the highest of all regions. If we

interpret this phenomenon in the spirit of traditional UV analysis we may draw some policy conclusions. Reductions of unemployment may be achieved by either a shift *of* the UV curve, or a shift *along* the UV curve. A shift of the UV curve, implying both a reduction of unemployment and vacancies, can only be established by policy measures which successfully improve the efficiency of the labour market. A shift along the UV–curve, implying an increase in vacancies and a reduction of unemployment, needs policy measures which successfully stimulate employment. Because the labour market efficiency of the northern part of The Netherlands is already quite high, the first type of policy measures are likely to be less effective. The regional policy recommendation from the analysis presented in this article is therefore clear: if the aim of regional policy is to bring down the unemployment rate in the northern part of The Netherlands, demand for labour should be stimulated. How to do that is, of course, another question.

Notes

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1. For example: Kuipers and Buddenberg, 1987, Van den Berg, 1982, De Neubourg, 1985. See for an overview: De Grip, 1987 and Muysken, 1989.
2. A similar shift of the UV curve in 1966–67 occurred in the UK. There is a variety of explanations for this shift: changes in the social security system, labour hoarding, structural changes in demand for labour between regions and occupational groups (Muysken, 1989).
3. Blanchard and Diamond, 1989, Jackman, Layard and Pissarides, 1989.
4. The data on unemployment in Figure 1 differ from those in Table 1 due to a recent statistical revision of unemployment figures.
5. This idea is based on Holt, 1970, who himself does not account for employed job seekers.
6. Blanchard and Diamond, 1989, pp. 26–27.
7. Van Ours, 1991.
8. Jackman, Layard and Pissarides, 1989, p. 379.
   Pissarides (1987, p. 482) justifies constant returns to scale by the fact that size does not appear to have a systematic influence on an economy's unemployment rate.
9. This means: $S = F_S.T_S$, $U = F_u.T_u$, $V = F_v.T_v$; in which: T_s = average duration of job search for an employed job seeker, T_u = average duration of unemployment, T_v = average vacancy duration.
10. To be sure, the unemployment data used in the introduction and in Table 1 are recent estimates, corrected for the bias of the public employment office. See also note 4.
11. This information is from the vacancy survey of the Central Bureau of Statistics, which started on a yearly basis in 1980.
12. Regarding the average duration of vacancies, Van Ours, 1989, concludes that vacancy durations are not influenced by the notification of vacancies.
13. Hartog,1980, pp. 76–77.
14. Van Ours and Ridder,1991, use the vacancy surveys of the Central Bureau of Statistics in which the incomplete duration of job vacancies is recorded in intervals of 0–1, 1–3, 3–6 and 6+ months. They estimate proportional hazard models using these data and then calculate completed vacancy durations.
15. Van Ours, 1991.

References

Berg, D.J. van den (1982)
'Specification and estimation of the unemployment–vacancy curve in the period 1956–1979', IN: *De Economist*, 130, pp. 379–419.

Blanchard, J.O. and P. Diamond (1989)
'The Beveridge curve', IN: *Brookings papers on Economic Activity*, No. 1, pp. 1–76.

Grip, A. de (1987)
Onderwijs en Arbeidsmarkt (Education and the labour market), thesis, Free University, Amsterdam.

Hartog, J. (1980)
Tussen vraag en aanbod (Between supply and demand), Leiden–Antwerp: Stenfert Kroese.

Holt, C.C. (1970)
'How can the Phillips Curve be moved to reduce both inflation and unemployment?', IN: Phelps, E.S. et al., *Microeconomic foundations of employment and inflation theory*, London and Basingstoke, pp. 224–256.

Jackman, R., R. Layard and C. Pissarides (1989)
'On Vacancies', IN: *Oxford Bulletin of Economics and Statistics*, 51, 4, pp. 377–394.

Kuipers, S.K. and F.H. Buddenberg (1978)
'Unemployment on account of market imperfections in The Netherlands since the Second World War', IN: *De Economist*, 126, pp. 380–412.

Muysken, J. (1989)
'Classification of unemployment: Analytical and policy relevance', IN: *De Economist*, 137, pp. 397–424.

Neubourg, C. de (1985)
'The origin and insignificance of Labour Market imperfections in The Netherlands: Another note on the specification of the UV Curve 1955–1980', IN: *De Economist*, 133, pp. 64–77.

Ours, J.C. van (1989)
'Durations of Dutch job vacancies', IN: *De Economist*, 137, No. 3, pp. 309–327.

Ours, J.C. van and G. Ridder (1991)
'Cyclical variation in vacancy duration and vacancy flows: An empirical analysis', IN: *European Economic Review*, 35, pp. 1143–1155.

Ours, J.C. van (1991)
'The efficiency of the Dutch Labour Market in matching unemployment and vacancies', IN: *De Economist*, 139, pp. 358–378.

Pissarides, C.A. (1987)
'Search, wage bargains and cycles', IN: *Review of Economic Studies*, 54, pp. 473–483.